

BSc Physics

This programme provides training to develop well-rounded physicists with the technical and specific scientific skills required to make a unique contribution in research and development environments where physics-related problems are investigated. Take note of the different majors in the three focal areas in this programme:

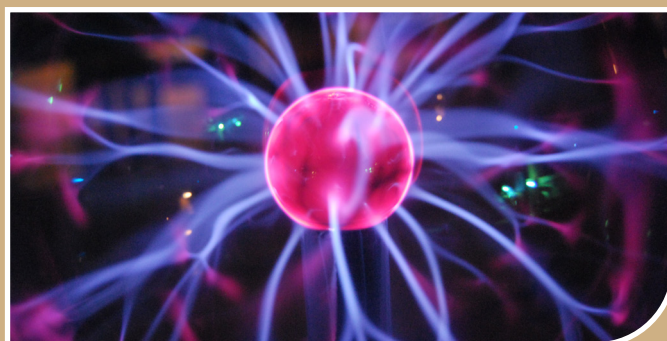
Focal areas	Major/s
Laser Physics (Physical), Nuclear Physics, Radiation and Health Physics	Physics & Applied Mathematics OR Chemistry OR Computer Science OR Mathematics
Laser Physics (Biological)	Physics & Biochemistry
Theoretical Physics	Physics & Applied Mathematics OR Computer Science OR Mathematics

NB: Consult the Faculty of Science Yearbook for detailed information on subjects and modules.

Do I qualify?

Minimum admission requirements

- Average (excluding Life Orientation): **65%**
- English OR Afrikaans
(Home Language or First Additional Language): **50%**
- Maths: **70%**
- Physical Sciences: **50%**



Focal areas explained:

Laser Physics (Physical), Nuclear Physics, Radiation and Health Physics

Experimental physicists are required in industry and in research and development environments. As a laser physicist you are equipped to participate in various metrological applications which use light and light-matter interactions, ranging from remote trace gas detection to diagnostic techniques in medicine, qualitative analysis, and communication. Institutions such as the Council for Scientific and Industrial Research (CSIR), the National Metrology Institute of South Africa (NMISA), Sasol, the defence and industry require these skills.

As a radiation physicist you can work as a hospital physicist or as a radiation control official with organisations that monitor radiation risks, such as the Department of Health, nuclear power stations, and mines.

As a nuclear physicist you can work in environments where techniques in nuclear physics are applied. Such environments include industries and institutions like Sasol, Eskom, the South African Nuclear Energy Corporation (NECSA), the National Nuclear Regulator (NNR), the South African Bureau of Standards (SABS) and the CSIR.

Laser Physics (Biological)

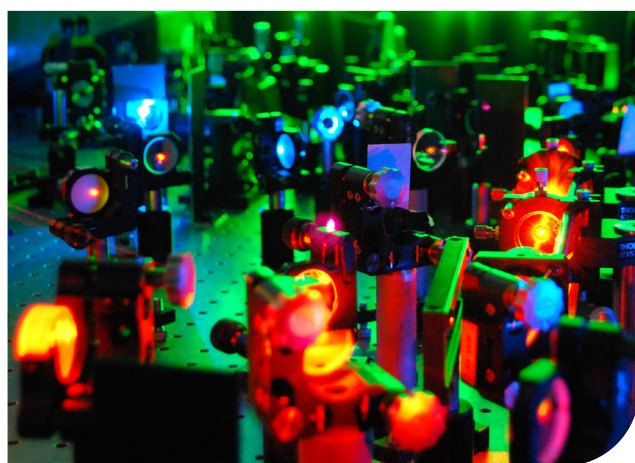
Because of the rapid increase in the use of lasers in medical and biological fields, there is a worldwide need for trained physicists with expertise in optics, lasers, and laser applications in the field of biology and medicine. Lasers provide innovative solutions over a wide front benefitting humanity. In medicine, lasers are used to correct vision, heal eye disorders that may cause blindness, treat skin diseases and to do surgery. Microscopic techniques using lasers have become commonplace in medical applications. New materials and medicines that are activated by laser light are developed.

Theoretical Physics

Students are prepared for research in the field of complex systems and for the application of quantum field theory, for instance in condensed matter physics, the physics of biological systems and particle physics. General relativity, astrophysics and cosmology are also active research areas within the department. Postgraduate study will prepare you for a professional career as a theoretical physicist. The curriculum is focused on physics and mathematics, requiring advanced computer skills.

Why study Physics?

- Physics forms the foundation of many other disciplines such as chemistry, astronomy, climate studies, the study of earthquakes, forensic sciences, and mechanical, civil, and electrical engineering.
- Physics principles are also applied in the biological and medical sciences.
- Physics teaches you critical analytical and problem-solving skills that can be applied to a wide range of fields – from the space industry to the financial world and risk analysis.
- Physics is listed as a scarce skill, which means there are not enough qualified physicists in South Africa!



Why study Physics at Stellenbosch University?

Did you know?

- The Department of Physics, established in 1903, is one of the oldest physics departments in South Africa.
- The Stellenbosch Photonics Institute boasts excellent laser facilities, world-class research projects, and a vibrant community of students, lecturers, and technical staff.
- Our nuclear physicists work closely with their counterparts at Ithemba LABS, the national accelerator facility located just outside Stellenbosch.
- Our astrophysicists are actively working on the epoch of reionization, extragalactic astronomy, the early Universe, dark matter indirect detection, neutron stars and black holes.
- Our quantum physicists are engaged in research in quantum computing, communication and sensing.

What can I do with a BSc Physics degree?

Astronomy and Astrophysics
Artificial intelligence
Atmospheric modeling
Aviation physicist
Biophysics
Data analysis
Data science

Experimental physics
Financial analysis
Forensic physics
Geophysics
Laboratory director
Nuclear physics
Physical sciences teacher

Quantum computing, communication and sensing
Radiation protection practitioner
Risk management
Robotics

“A BSc degree will open doors to many opportunities. But, more importantly, it is a way of thinking that is critical to take humanity forward.”

– undergraduate BSc student

Contact details

Department of Physics

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Website:

<https://physics.sun.ac.za/>

Contact our recruitment officer

Qaqamba Mhlauli

qmhlauli@sun.ac.za or science@sun.ac.za

Deadline for applications: 31 July

General selection and application criteria

<https://www.sun.ac.za/english/maties>